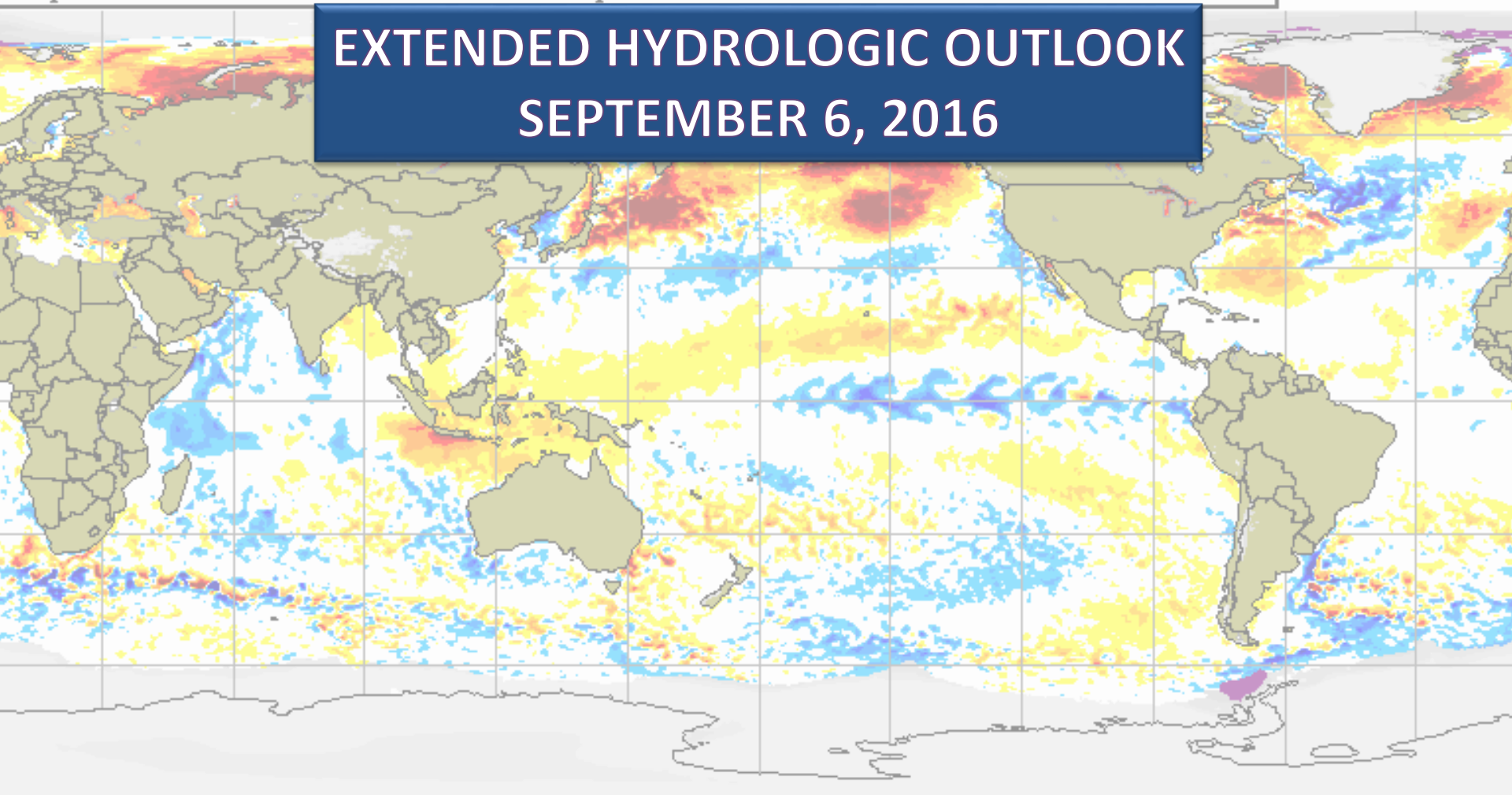


Global sea surface anomaly and snow cover  
06 Sep 2016

Anomalie de la température de la mer et épaisseur de la neige  
06 Sep 2016

# EXTENDED HYDROLOGIC OUTLOOK SEPTEMBER 6, 2016



Sea surface temperature anomaly / Anomalie de la température de la mer (°C)



Snow depth / Épaisseur de la neige (cm)



Uncovered sea ice  
Glace marine à découvrir  
Climatologie 1995-2009 Climatologie

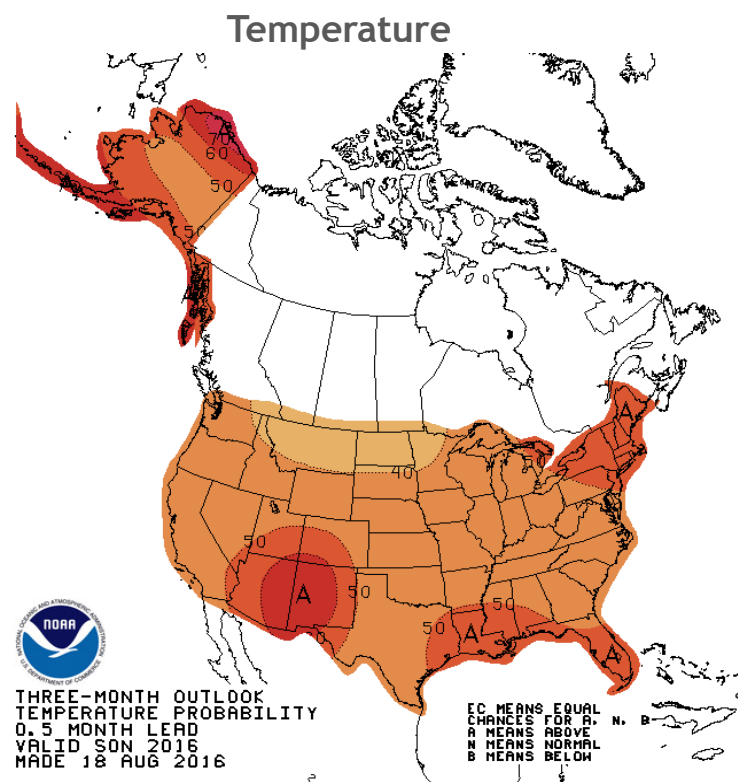
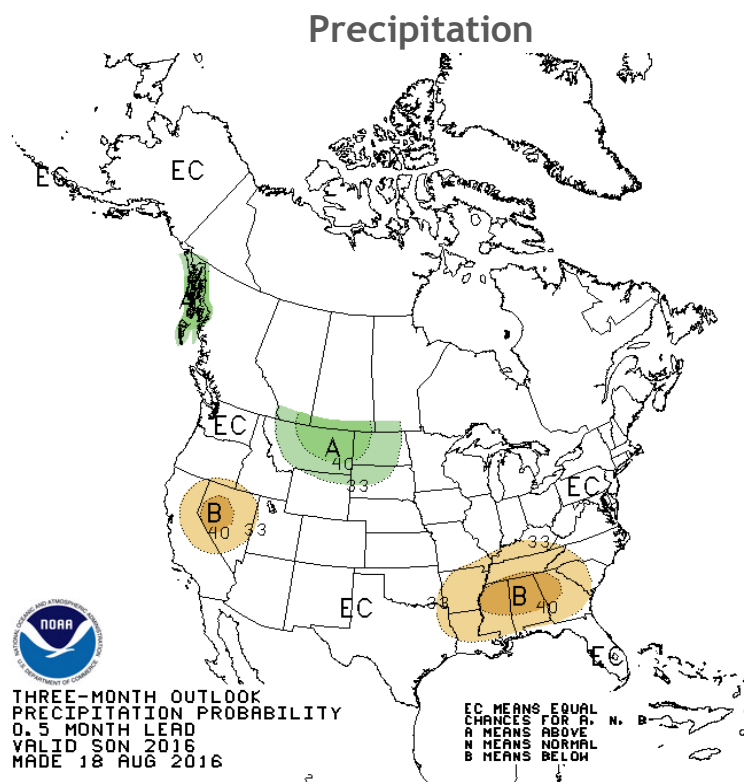
## Summary

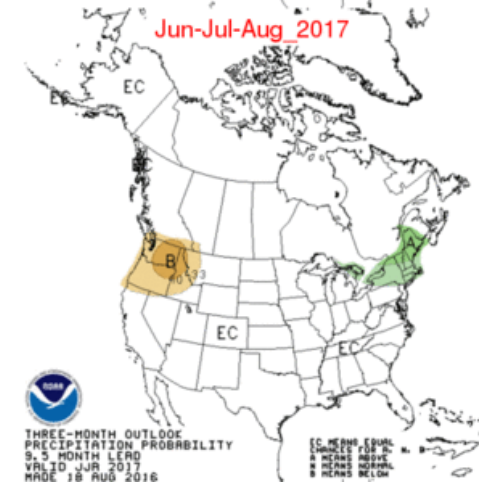
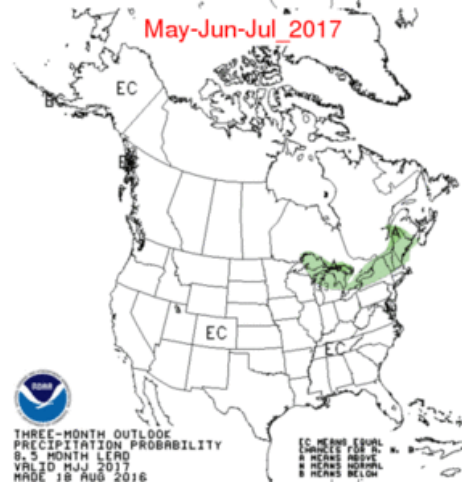
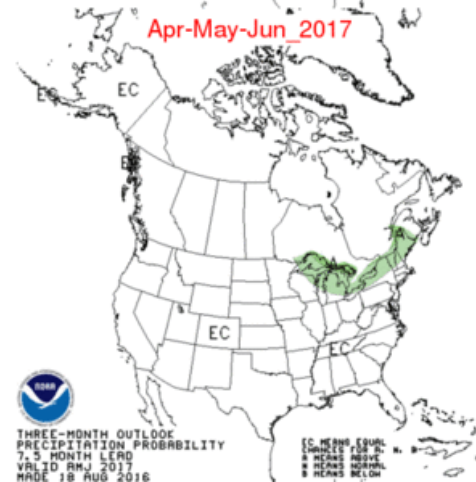
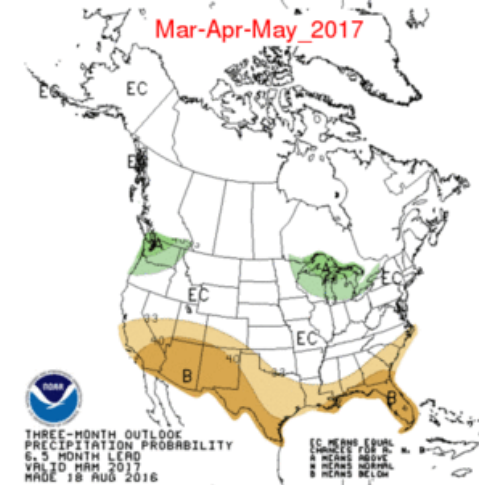
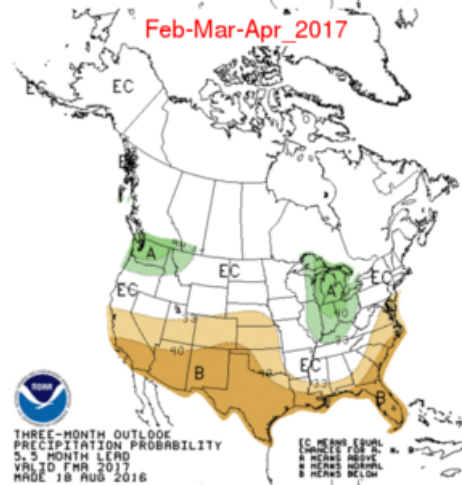
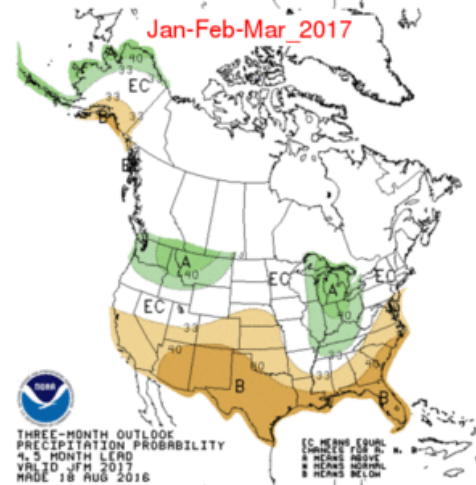
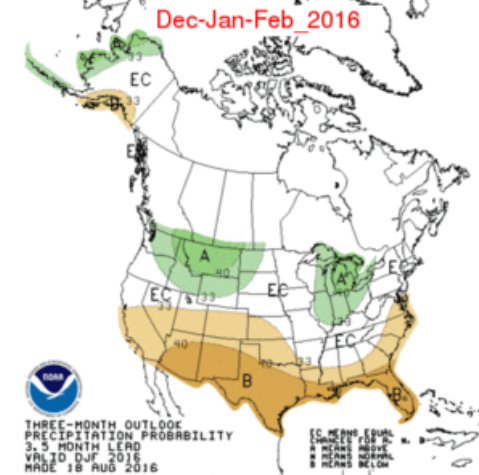
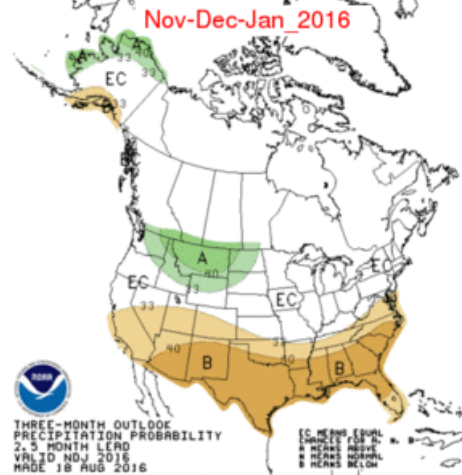
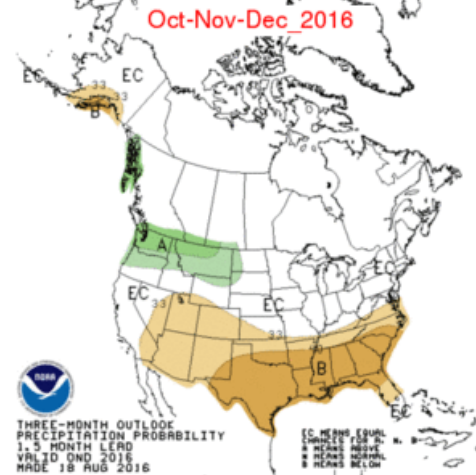
- The Climate Prediction Center (CPC) is forecasting equal chances of normal, above-normal or below-normal rainfall for September through November.
- ENSO-neutral conditions are present. La Niña is slightly favored to develop during August-October (ASO) 2016, with about a 55-60% chance of La Niña during the fall and winter 2016-17. Increased chance of tropical activity and rainfall in south Florida has the potential to decrease by 1/3 of normal between November and March.
- The strong positive phase of the Pacific Decadal Oscillation increases the potential for a greater number of El Niño events for multi-year periods.
- Watching Atlantic Multidecadal Oscillation (AMO) index for switch to negative (cold) phase, this has the potential to contribute to a drier-than-normal 2016 wet season. A good indicator of switch to the AMO cold phase will be an average to below-average hurricane season.

# U. S. Seasonal Outlooks

September - November 2016

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.



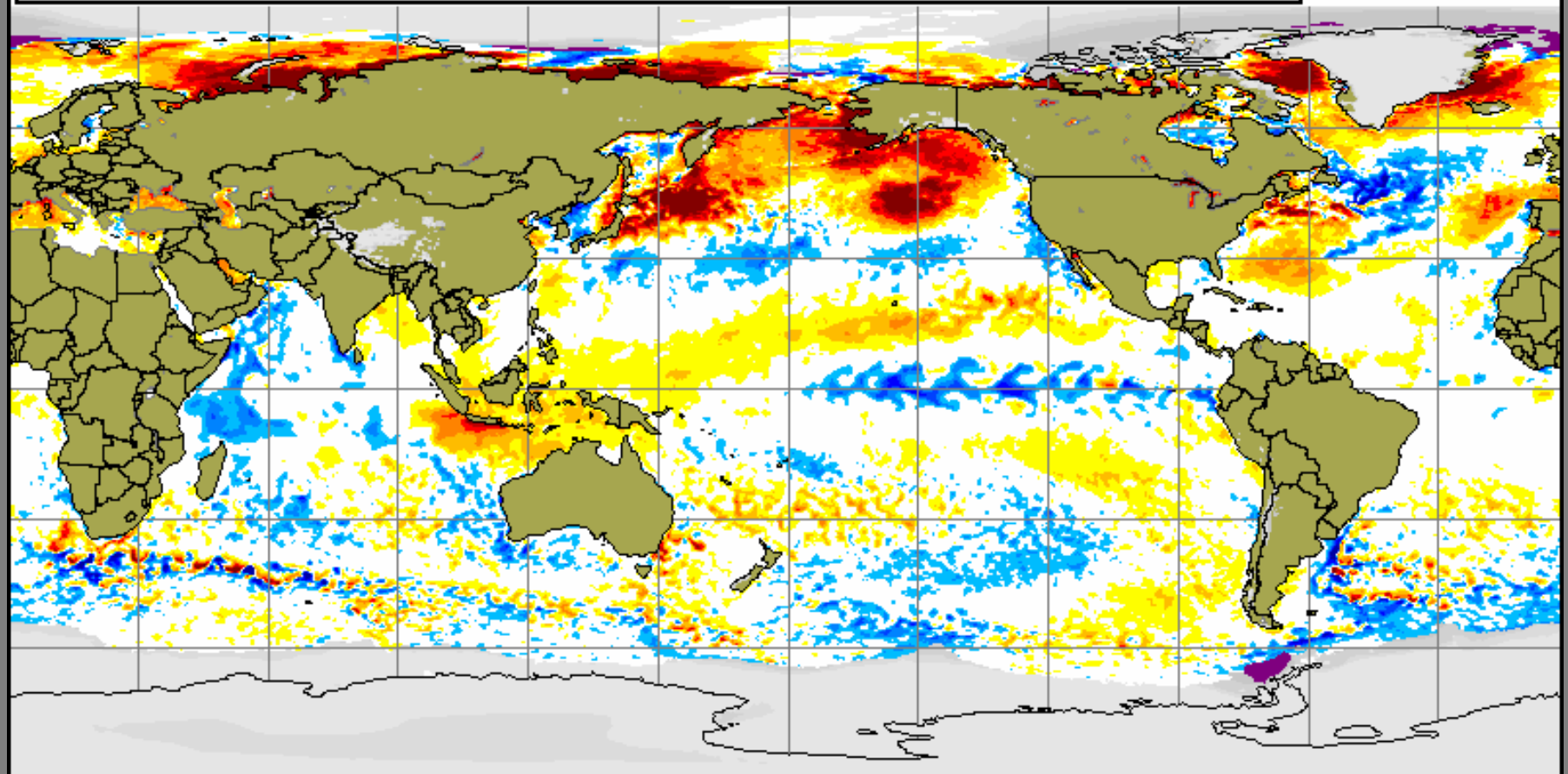




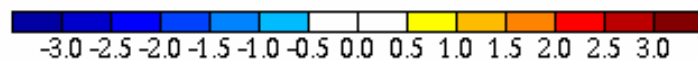
# Current Global Sea Surface Temperature Anomalies

Global sea surface anomaly and snow cover  
06 Sep 2016

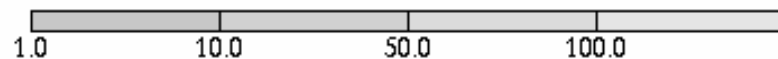
Anomalie de la température de la mer et épaisseur de la neige  
06 Sep 2016



Sea surface temperature anomaly / Anomalie de la température de la mer (C)



Snow depth / Épaisseur de la neige (cm)



Uncovered sea ice

Glace marine à découvert

Climatologie 1995-2009 Climatology

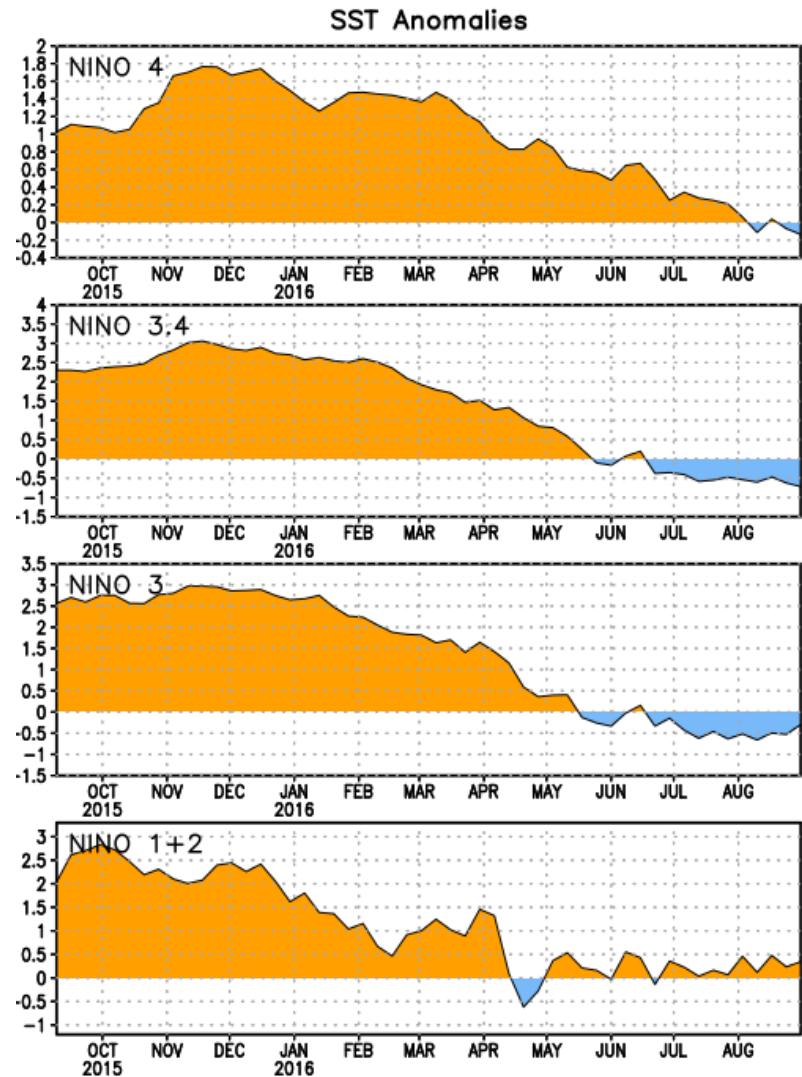
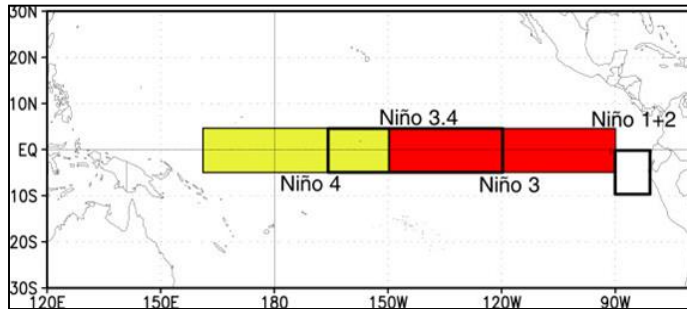


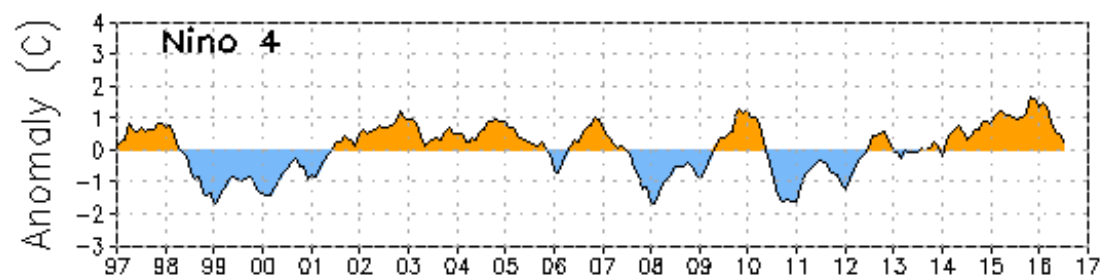
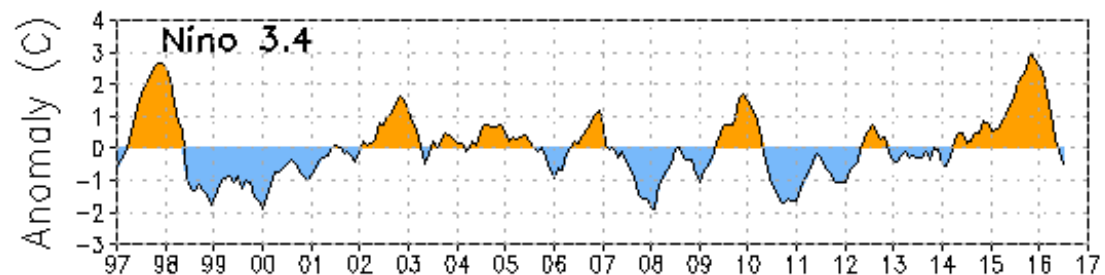
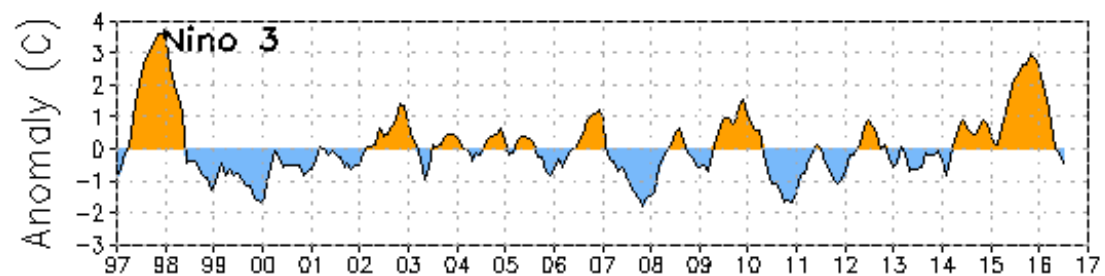
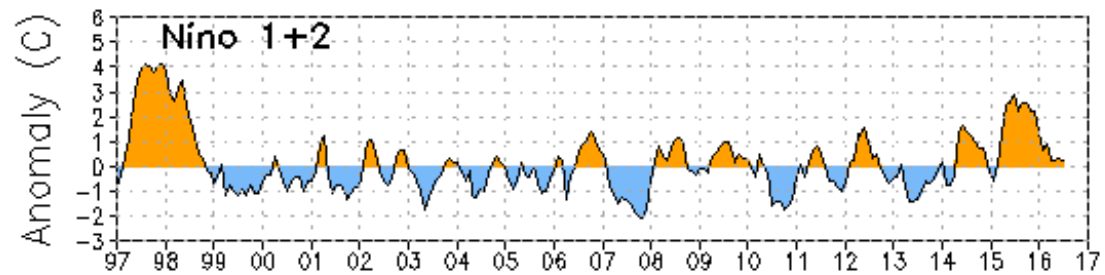
CMC Environnement Canada  
CMC Environnement Canada

# Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	-0.1°C
Niño 3.4	-0.7°C
Niño 3	-0.3°C
Niño 1+2	0.3°C





Data updated through July 2016

# Weekly Heat Content Evolution in the Equatorial Pacific

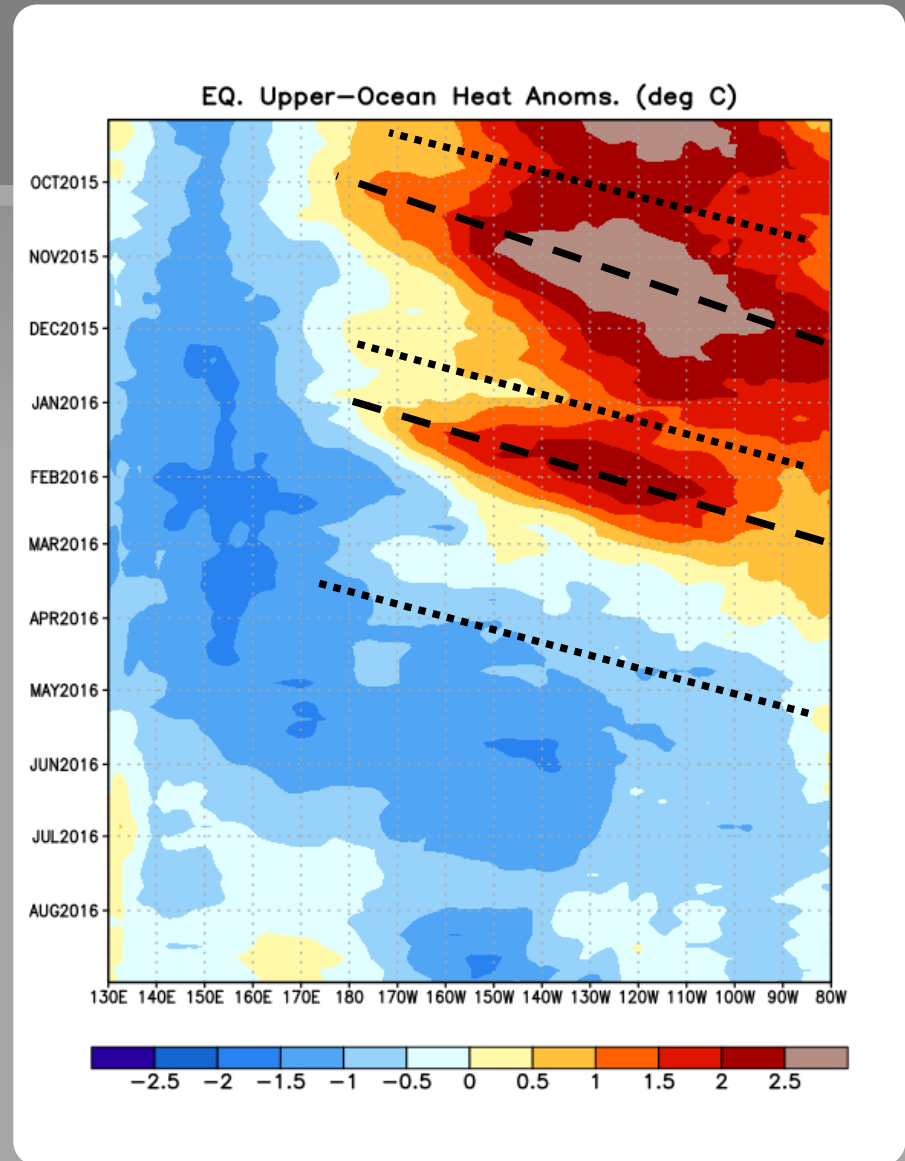
Downwelling phases of equatorial oceanic Kelvin waves were observed October-November 2015 and January-February 2016.

Since the passage of an upwelling equatorial oceanic Kelvin wave in March 2016, below-average subsurface temperatures have continued across much of the equatorial Pacific.

During June and July 2016, below-average subsurface temperatures weakened across the equatorial Pacific.

Since August, negative subsurface temperature anomalies strengthened east of the Date Line and weakened to the west.

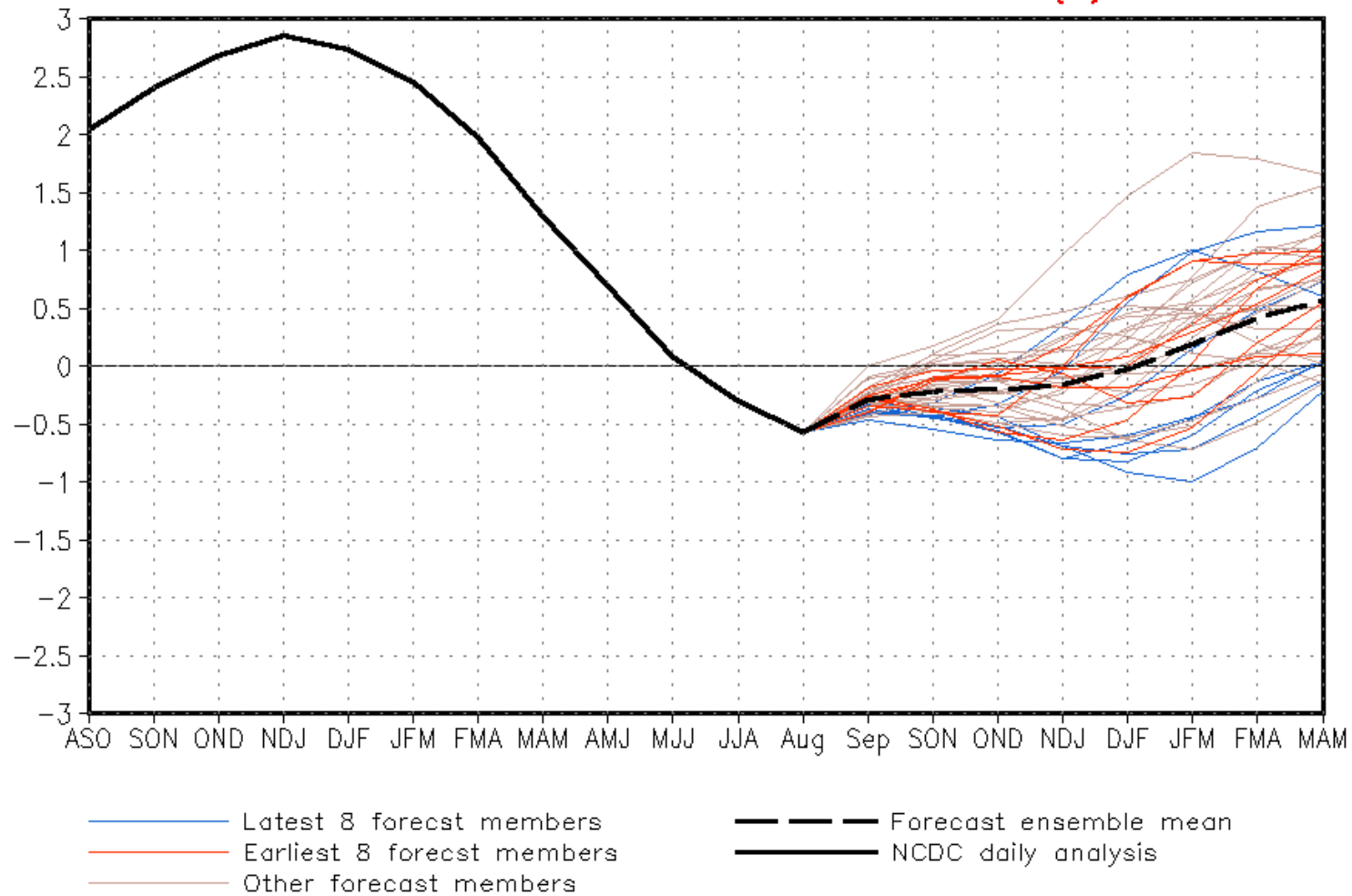
Equatorial oceanic Kelvin waves have alternating warm and cold phases. The warm phase is indicated by dashed lines. Downwelling and warming occur in the leading portion of a Kelvin wave, and up-welling and cooling occur in the trailing portion.







### CFSv2 forecast Nino3.4 SST anomalies (K)



# IRI/CPC Pacific Niño

## 3.4 SST Model Outlook

Most multi-model averages indicate a borderline or a weak La Niña starting during the Northern Hemisphere fall and persisting through winter 2016-17.

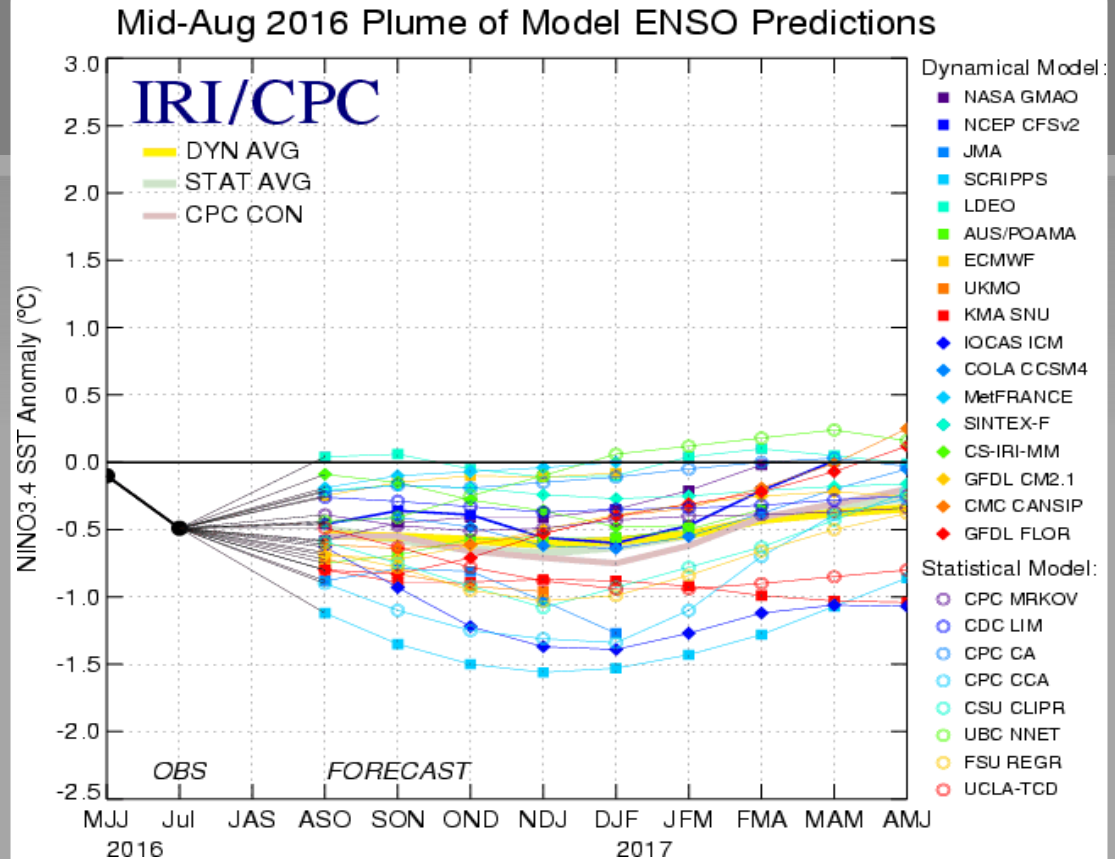


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 16 August 2016).

# Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v4

Recent Pacific warm (red) and cold (blue) periods based on a threshold of  $\pm 0.5$  °C for the Oceanic Nino Index (ONI) [3 month running mean of ERSST.v4 SST anomalies in the Nino 3.4 region (5N-5S, 120-170W)]. For historical purposes, periods of below and above normal SSTs are colored in blue and red when the threshold is met for a minimum of 5 consecutive over-lapping seasons.

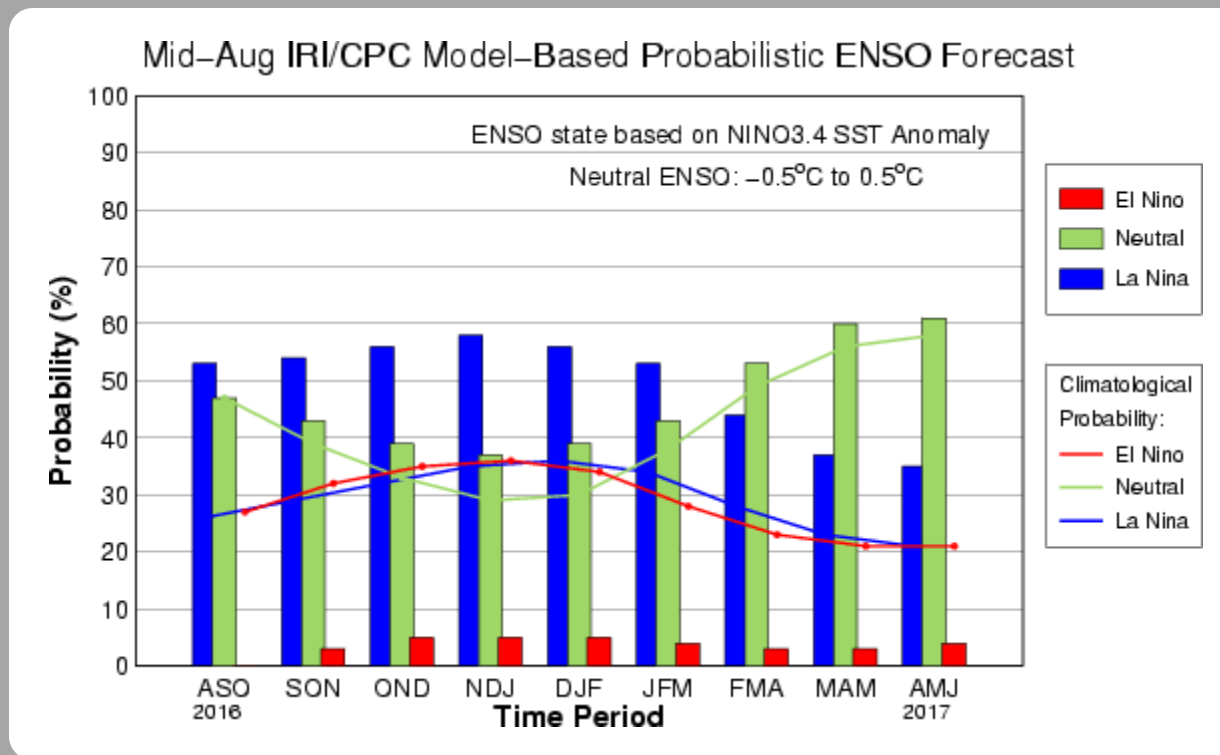
The ONI is one measure of the El Niño-Southern Oscillation, and other indices can confirm whether features consistent with a coupled ocean-atmosphere phenomenon accompanied these periods. The complete table going back to DJF 1950 can be found [here](#).

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2004	0.3	0.3	0.2	0.1	0.2	0.3	0.5	0.6	0.7	0.7	0.6	0.7
2005	0.7	0.6	0.5	0.5	0.3	0.2	0.0	-0.1	0.0	-0.2	-0.5	-0.7
2006	-0.7	-0.6	-0.4	-0.2	0.0	0.0	0.1	0.3	0.5	0.7	0.9	0.9
2007	0.7	0.4	0.1	-0.1	-0.2	-0.3	-0.4	-0.6	-0.9	-1.1	-1.3	-1.3
2008	-1.4	-1.3	-1.1	-0.9	-0.7	-0.5	-0.4	-0.3	-0.3	-0.4	-0.6	-0.7
2009	-0.7	-0.6	-0.4	-0.1	0.2	0.4	0.5	0.5	0.6	0.9	1.1	1.3
2010	1.3	1.2	0.9	0.5	0.0	-0.4	-0.9	-1.2	-1.4	-1.5	-1.4	-1.4
2011	-1.3	-1.0	-0.7	-0.5	-0.4	-0.3	-0.3	-0.6	-0.8	-0.9	-1.0	-0.9
2012	-0.7	-0.5	-0.4	-0.4	-0.3	-0.1	0.1	0.3	0.3	0.3	0.1	-0.2
2013	-0.4	-0.4	-0.3	-0.2	-0.2	-0.2	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3
2014	-0.5	-0.5	-0.4	-0.2	-0.1	0.0	-0.1	0.0	0.1	0.4	0.5	0.6
2015	0.6	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.7	2.0	2.2	2.3
2016	2.2	2.0	1.6	1.1	0.6	0.1	-0.3					

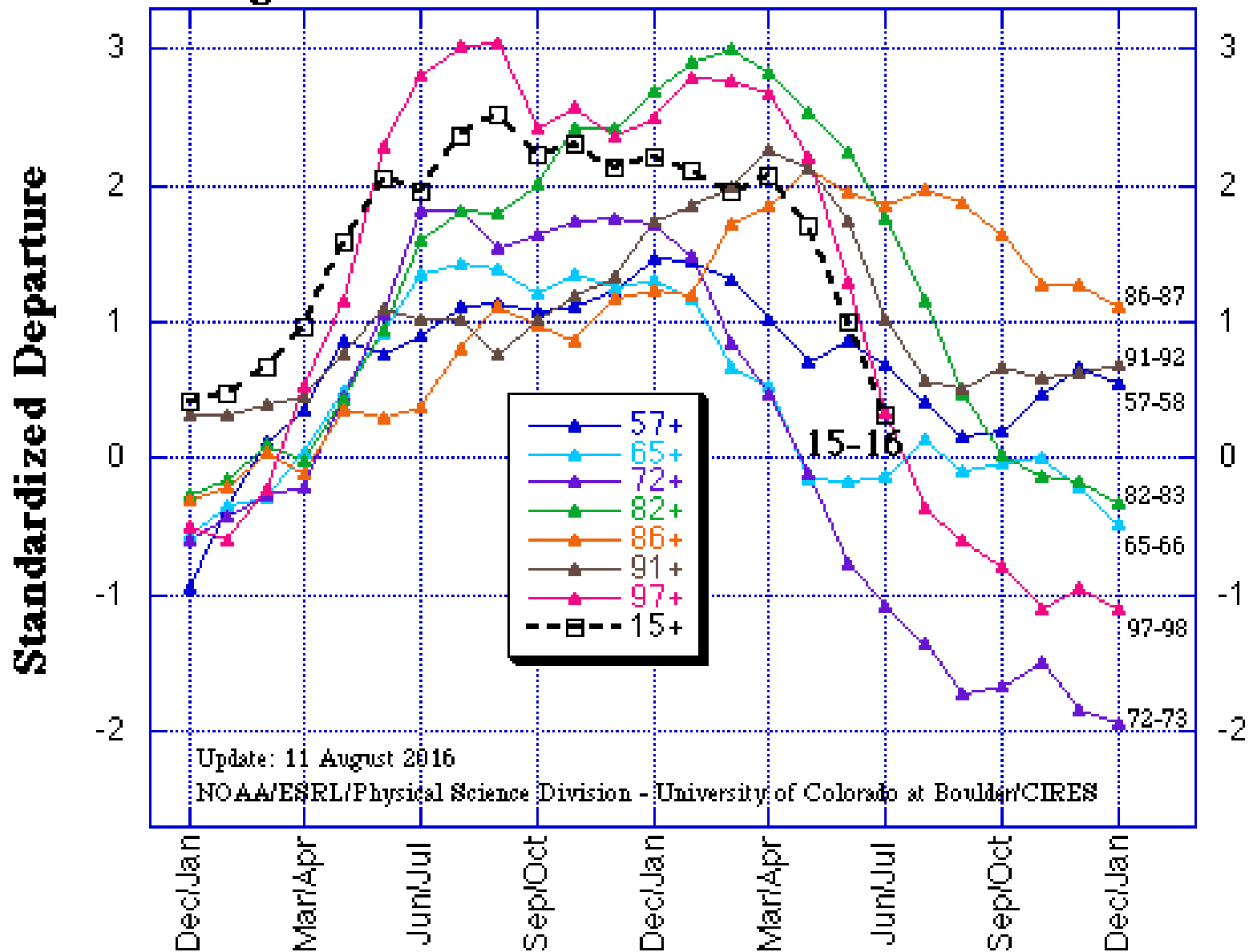
# CPC/IRI Probabilistic ENSO Outlook

Updated: 18 August 2016

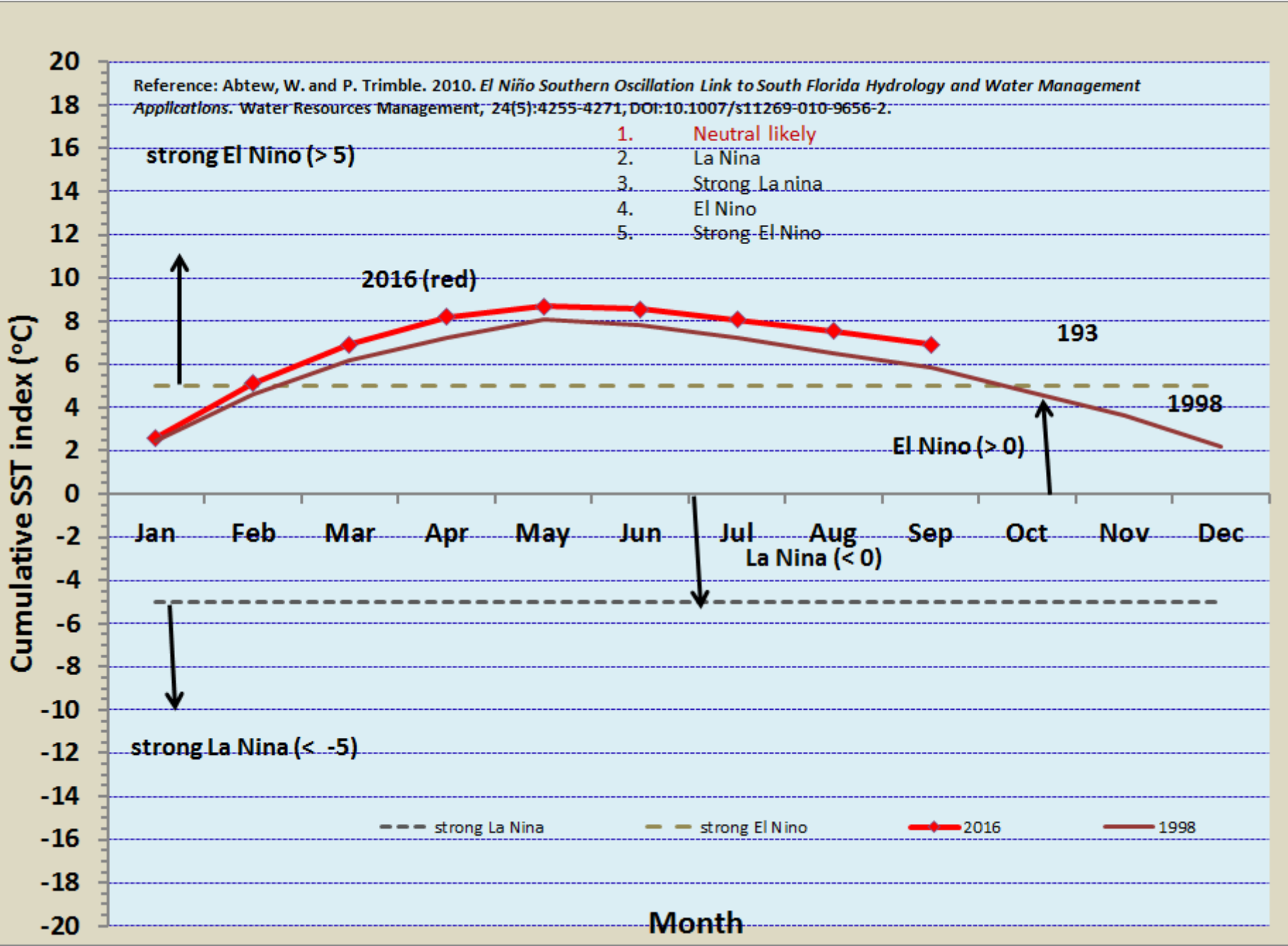
La Niña is slightly favored by August-September-October (ASO) 2016. The chance of La Niña is roughly 55-60% during the Northern Hemisphere fall and winter 2016-17.



# Multivariate ENSO Index (MEI) for the seven strongest El Niño events since 1950 vs. 2015-16





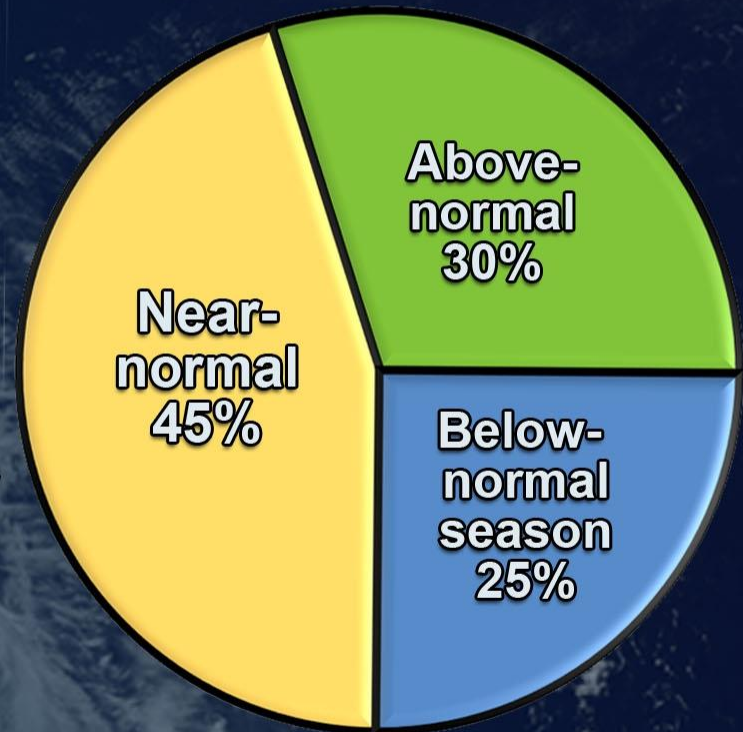


Source: Wossenu Abtew (SFWMD)

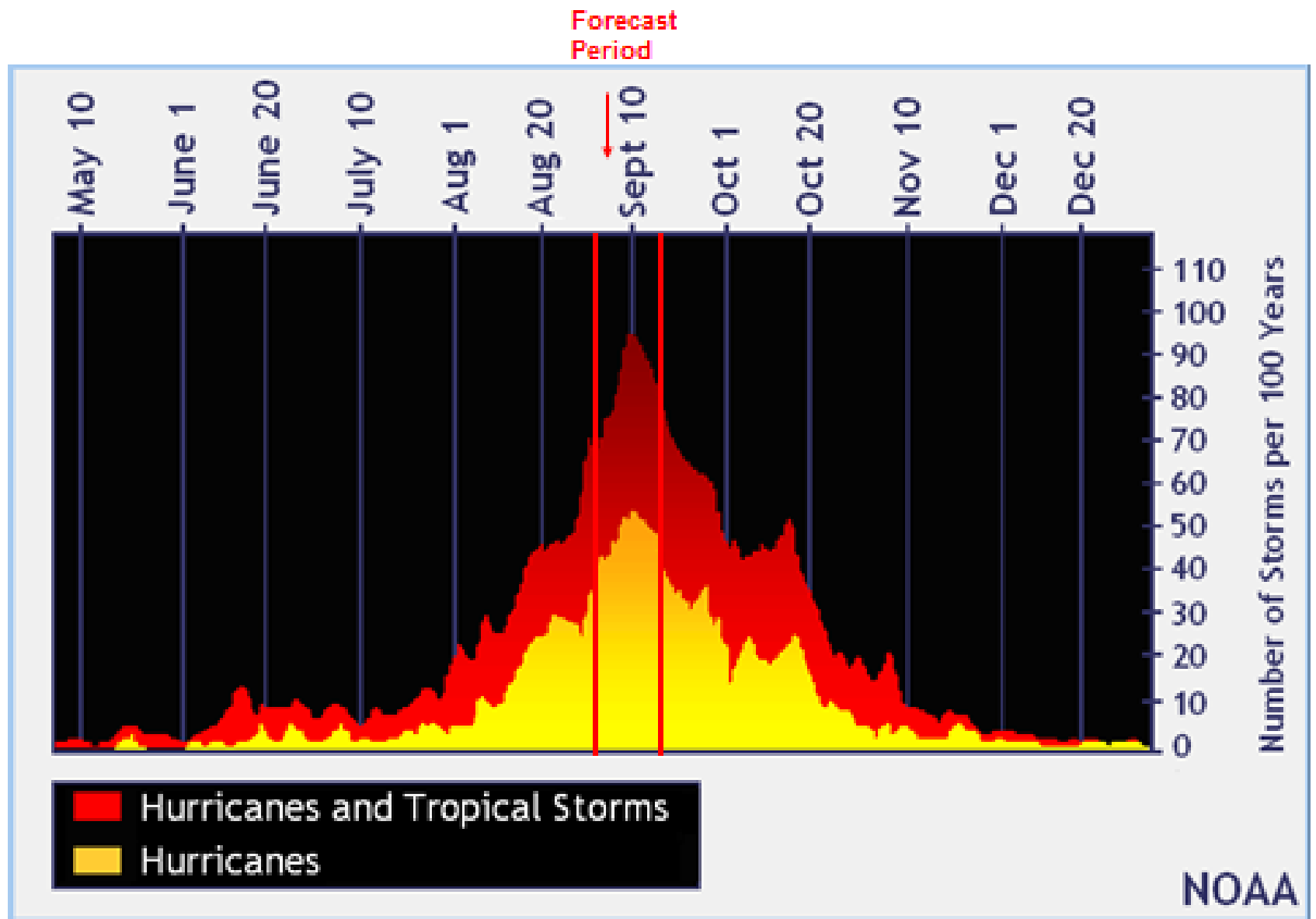
# 2016 Atlantic Hurricane Season Outlook

**Named storms: 10 - 16**  
**Hurricanes: 4 - 8**  
**Major hurricanes: 1 - 4**

Outlook  
probability



Be prepared: Visit [hurricanes.gov](http://hurricanes.gov)  
and follow @NWS and @NHC\_Atlantic on Twitter

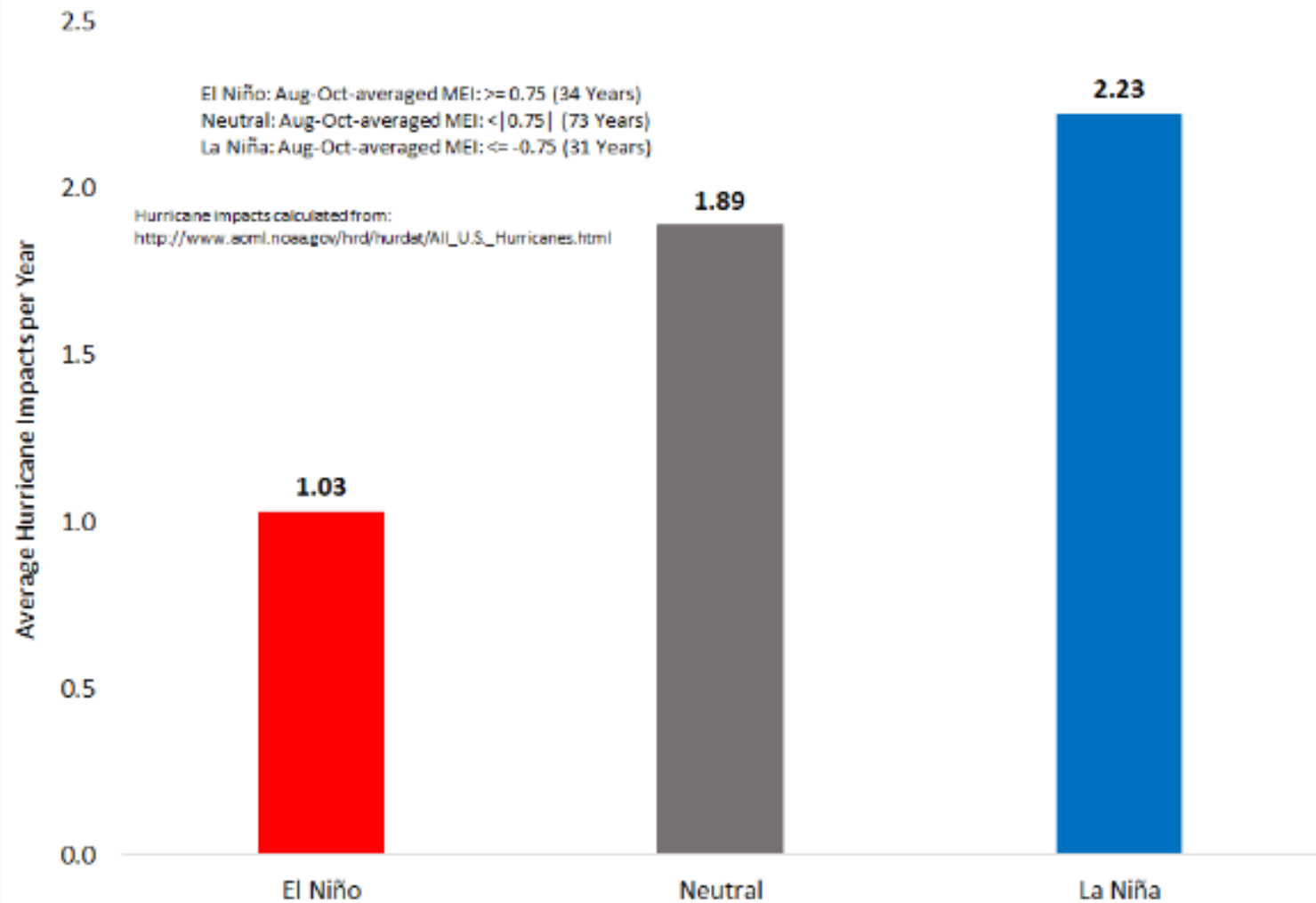


Source: Department of Atmospheric Science (CSU)/NOAA

### ATLANTIC BASIN SEASONAL HURRICANE FORECAST FOR 2016

Forecast Parameter and 1981-2010 Median (in parentheses)	Issue Date 14 April 2016	Issue Date 1 June 2016	Issue Date 1 July 2016	Observed Activity Through July 2016	Forecast Activity After 31 July	Total Seasonal Forecast
Named Storms (NS) (12.0)	13	14	15	4	11	15
Named Storm Days (NSD) (60.1)	52	53	55	6.50	48.50	55
Hurricanes (H) (6.5)	6	6	6	1	5	6
Hurricane Days (HD) (21.3)	21	21	21	1	22	23
Major Hurricanes (MH) (2.0)	2	2	2	0	2	2
Major Hurricane Days (MHD) (3.9)	4	4	4	0	5	5
Accumulated Cyclone Energy (ACE) (92)	93	94	95	6	94	100
Net Tropical Cyclone Activity (NTC) (103%)	101	103	105	13	97	110

### United States Hurricane Impacts by ENSO Phase (1878-2015)



**Philip Klotzbach** @philklotzbach · 18 Dec 2015

Over twice as many hurricanes impact the United States in La Nina years vs. El Nino years. #ElNino



28

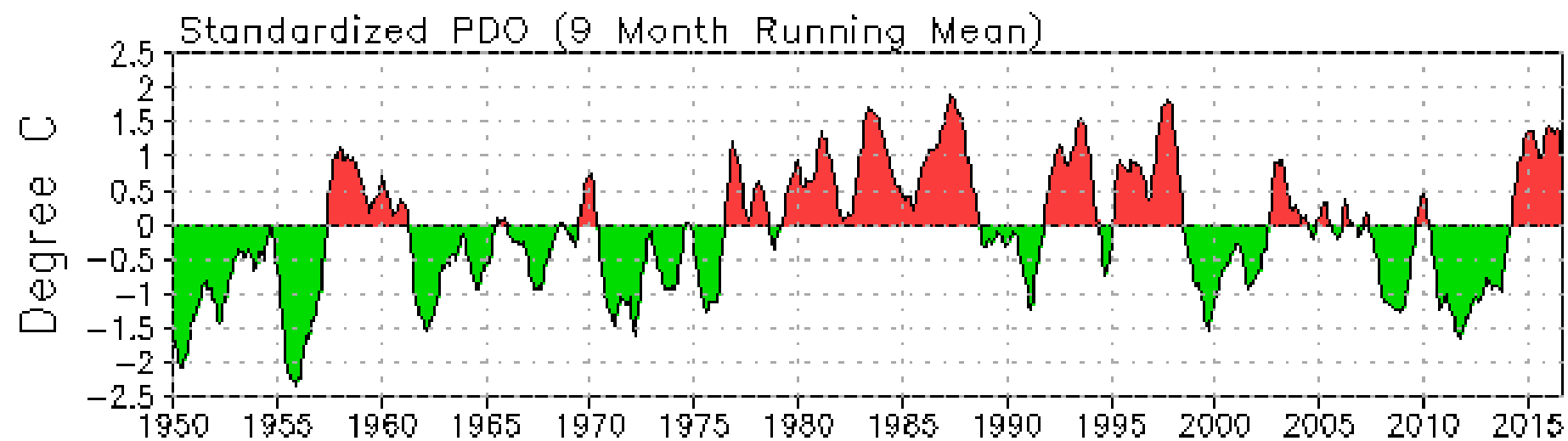


16

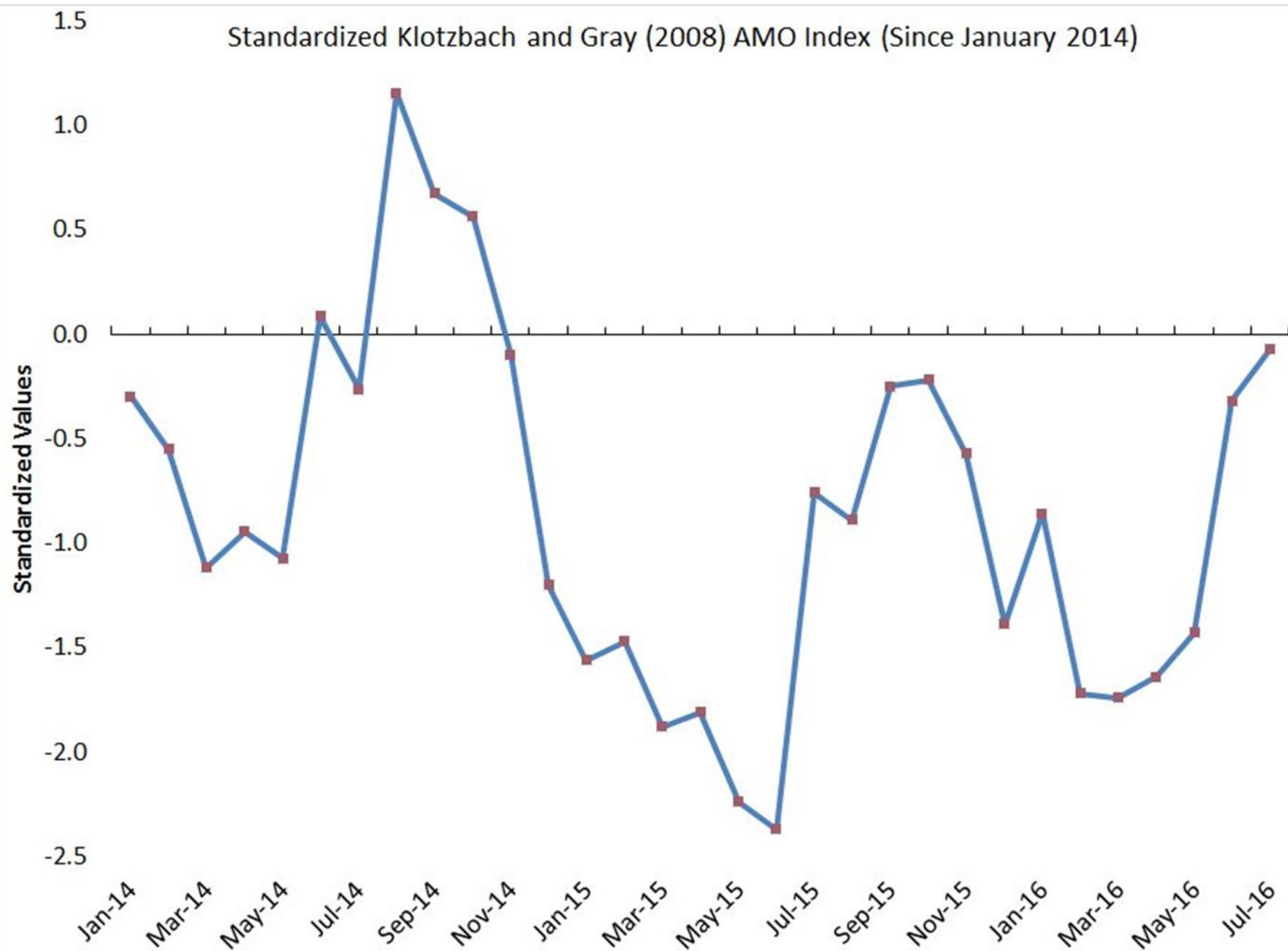


Source: Phil Klotzbach (CSU)

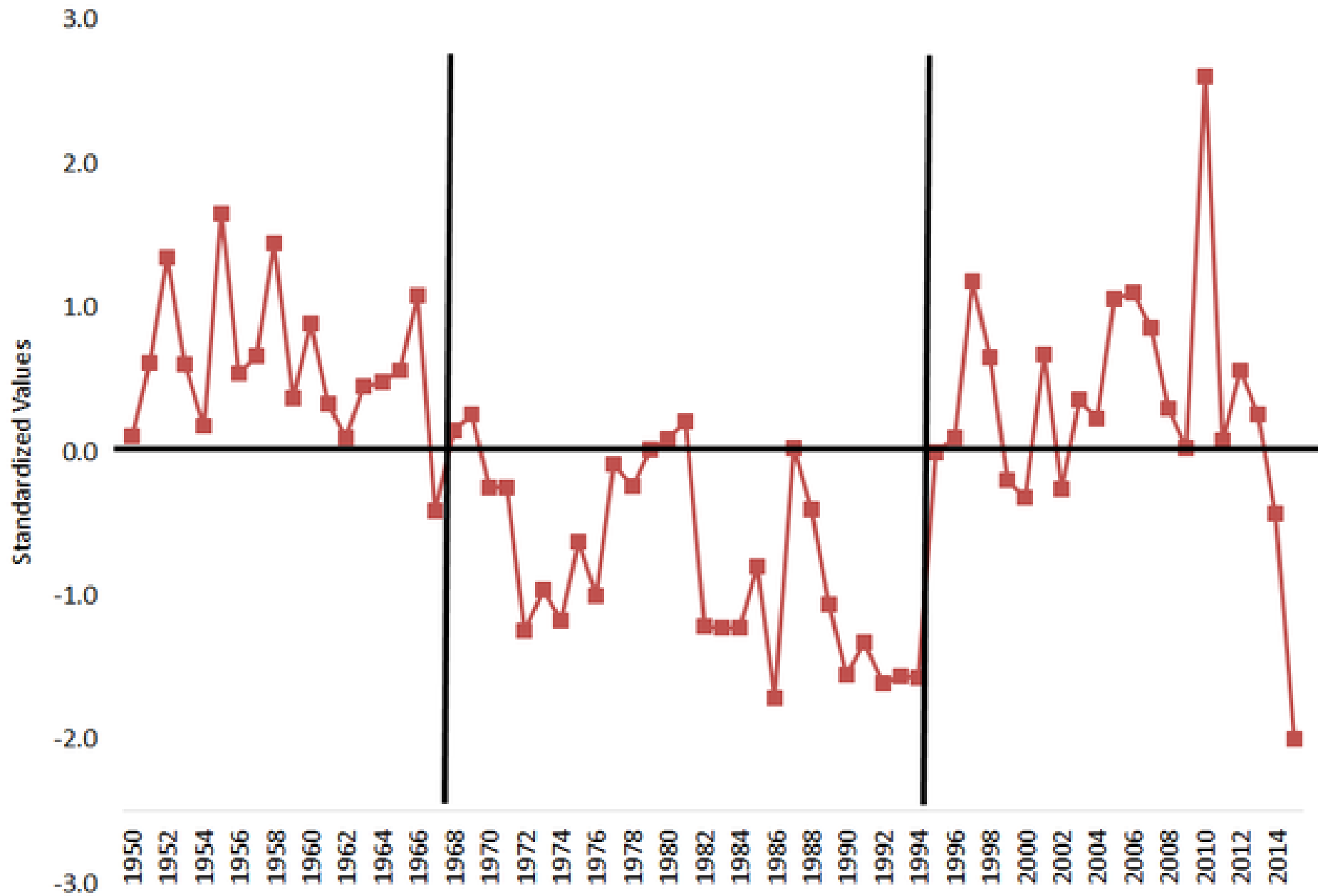




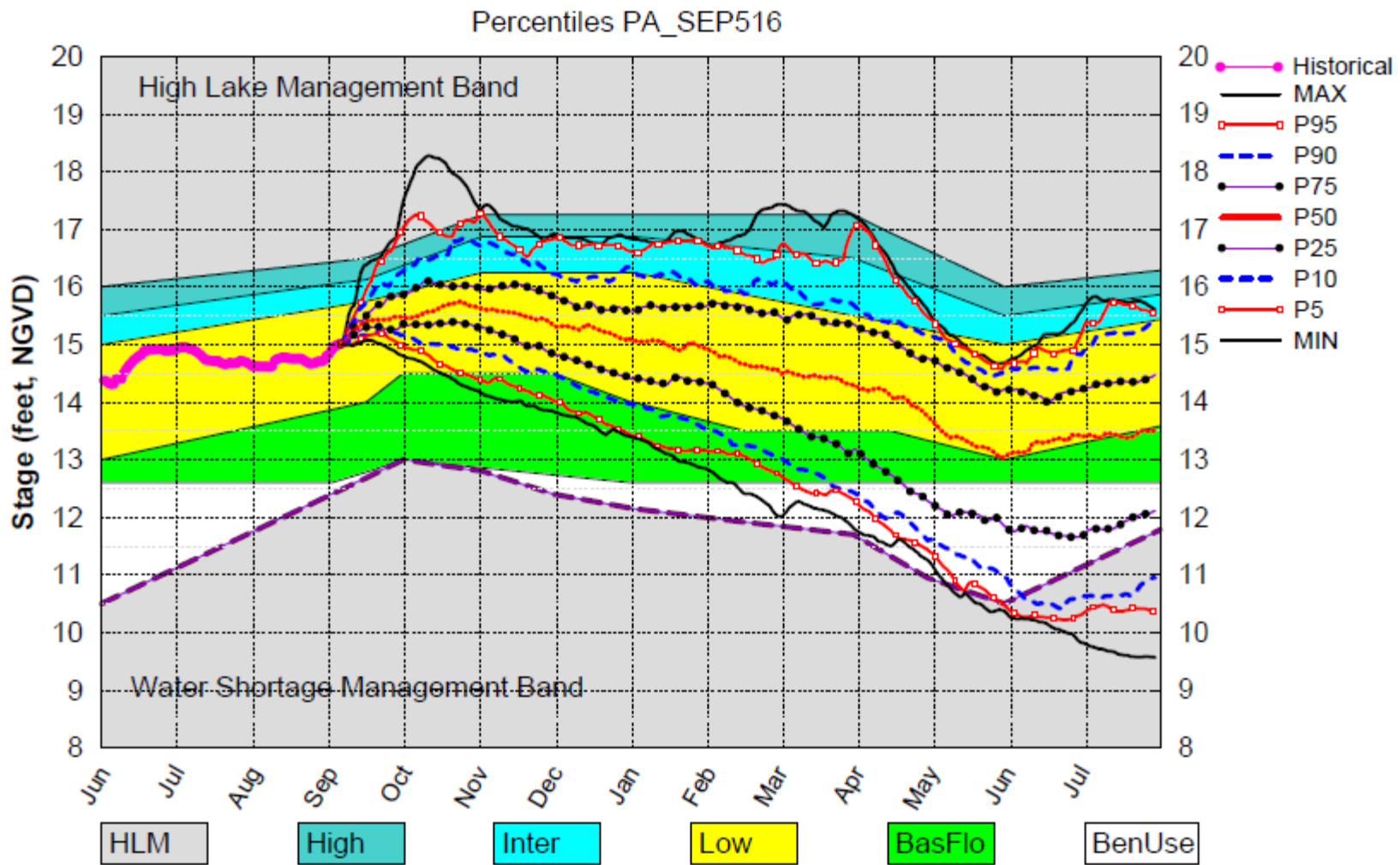
Standardized Klotzbach and Gray (2008) AMO Index (Since January 2014)



Annual AMO Index (1950-2015) - Calculated from Klotzbach and Gray (2008)



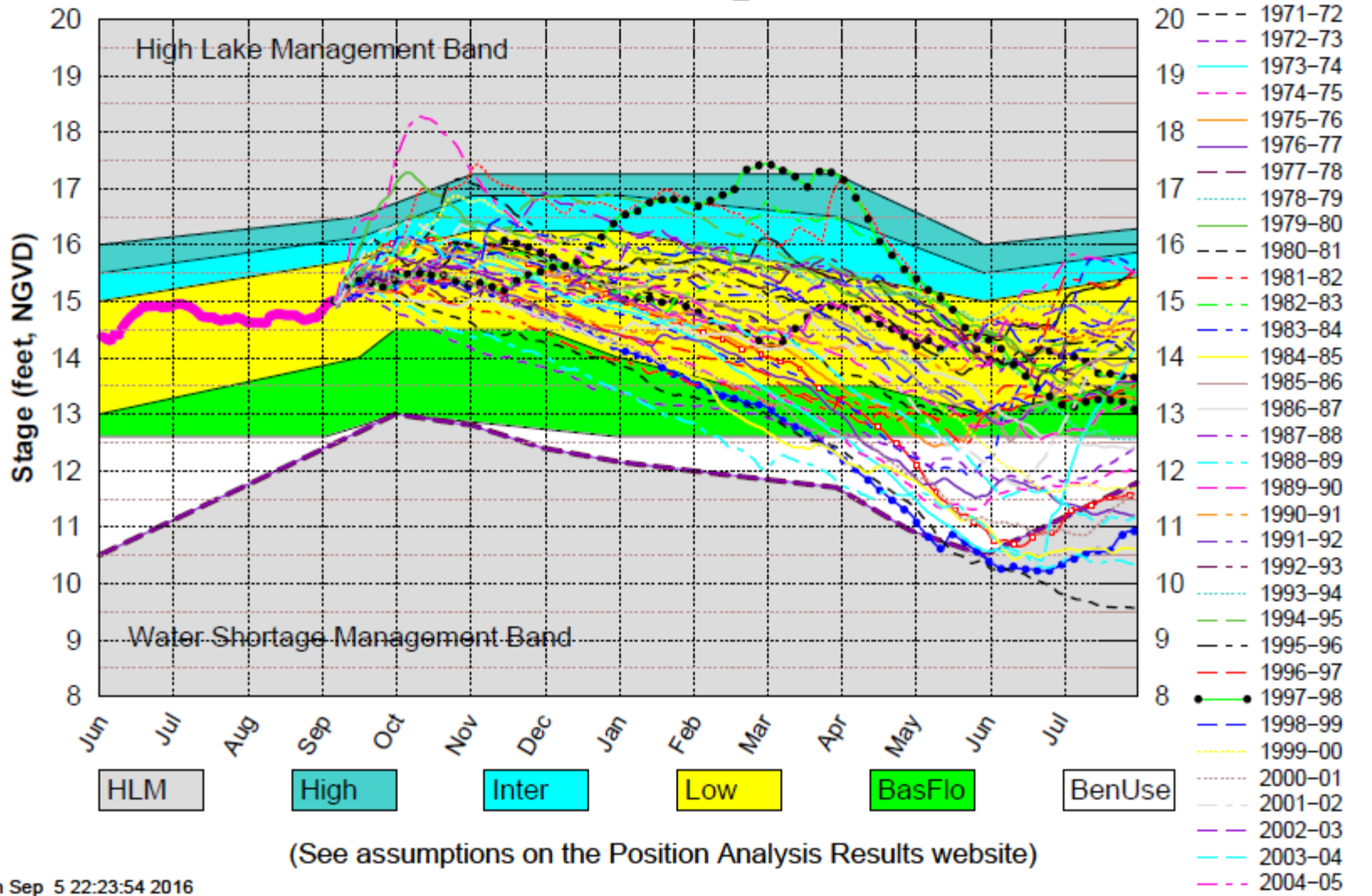
# Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis



(See assumptions on the Position Analysis Results website)

# Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis

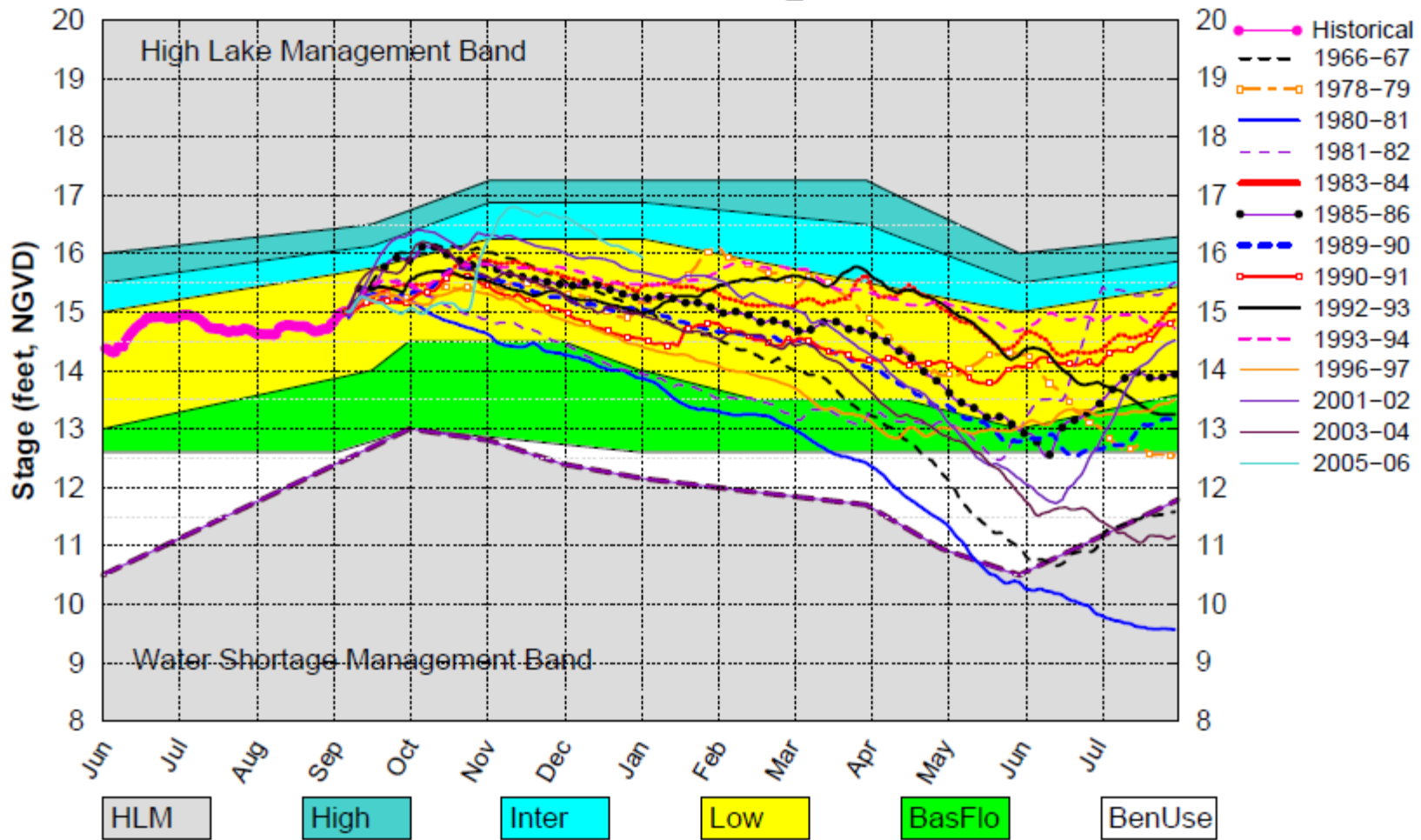
All Simulated Years Plot PA\_SEP516





# Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis

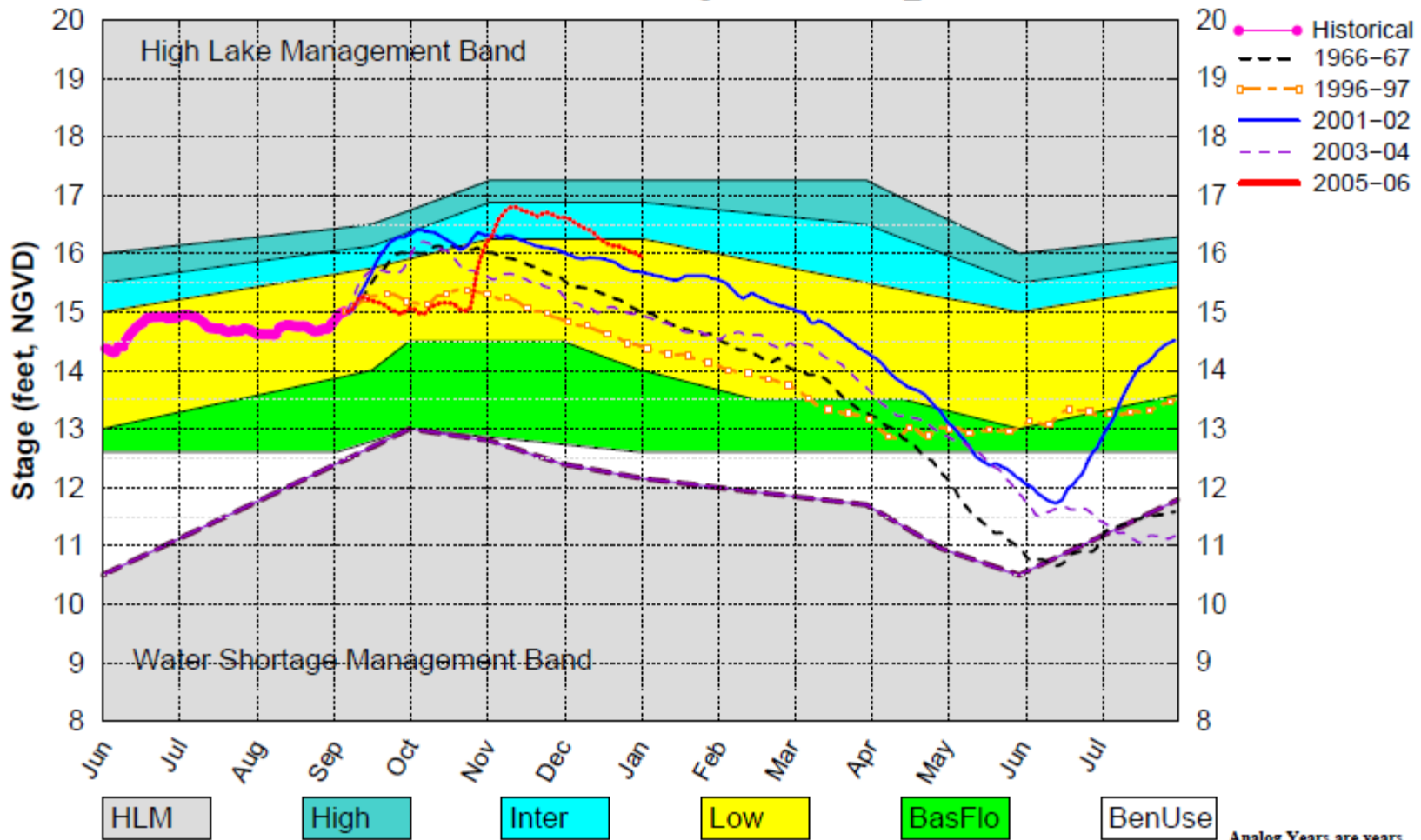
All ENSO Neutral Years Plot PA\_SEP516



(See assumptions on the Position Analysis Results website)

# Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis

AMO Warm / ENSO Neutral Analog Years Plot PA\_SEP516



(See assumptions on the Position Analysis Results website)

Analog Years are years  
with similar climatological conditions  
to the current year.